

REMARKS

The Office Action dated October 15, 2003, has been received and reviewed.

Claims 1-3, 5, and 7-31 are currently pending and under consideration in the above-referenced application. Claims 4, 6, and 32, which were withdrawn from consideration, were canceled in the Amendment Under 37 C.F.R. § 1.116 that was filed on September 22, 2003.

Reconsideration of the above-referenced application is respectfully requested.

Claim Amendments

Claims 1-3, 5, and 7-31 have each been amended to replace the term “said” with “the.” As these are equivalent terms, none of these amendments alters the scope of any of claims 1-3, 5, or 7-31.

Independent claim 1 has also been amended to recite that the plurality of at least partially superimposed, contiguous, mutually adhered layers of the at least one stabilizer recited in that claim comprise *the same type of* dielectric material.

Independent claim 25 has additionally been amended to replace an incidence of the element “at least one stabilizer” with “at least one nonconductive stabilizer,” providing greater consistency. As both of these terms refer to the same element, and since the revision has been made merely to improve consistency within the claim, this amendment does not alter the scope of independent claim 25 or of any of the claims that depend therefrom.

Independent claim 31 has been amended to recite that the contact pads of the substrate thereof are arranged substantially in-line with one another and are positioned proximate to a center line of the substrate, and that at least one stabilizer thereof is positioned between all of the contact pads and a periphery of a surface of the substrate.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claim 2 stands rejected under 35 U.S.C. § 112, second paragraph, for purportedly reciting indefinite subject matter. Specifically, it has been asserted that the recitation, “in contact with at least one of said contact pads will extend beyond said surface . . .,” is indefinite.

In context, it is clear that claim 2 is drawn to the distance that “at least one stabilizer” protrudes from a surface of a substrate. In this regard, claim 2 recites that the “at least one stabilizer protrudes from the surface [of the substrate] a distance [which is] no more than,” or does not exceed, “a distance that at least one conductive structure to be disposed in contact with at least one of the contact pads [of the substrate] will extend beyond the surface” of the substrate.

As claim 2 merely defines the distance that “at least one stabilizer” protrudes from the surface of a substrate in relative terms, *i.e.*, relative to the distance “at least one conductive structure” extends beyond the same surface, it is respectfully submitted that the subject matter to which claim 2 is drawn is recited with sufficient clarity to comply with the definiteness requirement of the second paragraph of section 112.

Therefore, withdrawal of the 35 U.S.C. § 112, second paragraph, rejection of claim 2 is respectfully requested.

Rejections Under 35 U.S.C. § 102(b)

Claims 1-3, 5, 7-11, 13-22, 24, 25, and 27-31 stand rejected under 35 U.S.C. § 102(b) for being directed to subject matter which is assertedly anticipated by the subject matter described in Japanese patent publication JP 11-40608 of Kikuchi et al. (hereinafter “Kikuchi”).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Kikuchi, inasmuch as the translation thereof can be understood, describes semiconductor device assemblies that include support members 6 that are configured to be disposed between a circuit board 5, 10 and another circuit board 2 to which a semiconductor die 1 is secured. Support members 6 may be secured to (*see, e.g.*, paragraph [0041]) or integrally formed with (*see, e.g.*, paragraphs [0073], [0081], and [0082]) either circuit board 2 or circuit board 5, 10.

The description of Kikuchi is limited to support structures 6 that include a single layer of material, such as a glass epoxy resin (see, e.g., paragraphs [0026], [0060], [0086]) or another, undescribed material (see paragraph [0087]).

Although an adhesive may be used to secure support members 6 to a circuit board 2, 5, 10, Kikuchi does not expressly or inherently describe that such adhesive actually comprises any part of a support member 6. In fact, Kikuchi lacks any express or inherent description of how the adhesive material mentioned in paragraph [0041] may be configured. Rather, in the English translation that has been provided, the description of Kikuchi is limited to use of the adhesive to attach support members 6 to circuit board 2.

Moreover, Kikuchi lacks any express or inherent description of the type of adhesive material that may be used to secure support members 6 to circuit board 2. As such a material may be electrically conductive, Kikuchi cannot be said to expressly or inherently describe that the adhesive described therein is a dielectric material.

Independent claim 1 is directed to a semiconductor device component that includes a substrate, as well as at least one stabilizer protruding from a surface of the substrate. The at least one stabilizer is positioned between a periphery of the surface of the substrate and each contact pad of the substrate that is exposed to the surface from which the at least one stabilizer protrudes. Independent claim 1 also recites that the at least one stabilizer includes a plurality of at least partially superimposed, contiguous, mutually adhered layers of dielectric material. As amended herein, independent claim 1 requires that the plurality of layers of the at least one stabilizer be formed from *the same* dielectric material.

Again, the mere mention in Kikuchi that the support members 6 described therein may be secured to a circuit board 2 with an adhesive does not constitute an express or inherent description that support members may include a plurality of at least partially superimposed, contiguous, mutually adhered layers. Moreover, the support members 6 of Kikuchi are illustrated as single-layer structures, with no description that they may include multiple layers.

In addition, assuming, *arguendo*, that the adhesive described in Kikuchi actually formed a part of a support member 6, Kikuchi does not expressly or inherently describe that the adhesive mentioned therein is a dielectric material.

Further, Kikuchi includes no express or inherent description that support members 6 and the adhesive material described therein may be formed from the same type of dielectric material.

For these reasons, it is respectfully submitted that Kikuchi does not anticipate each and every element of amended independent claim 1. It is, therefore, respectfully submitted that, under 35 U.S.C. § 102(b), amended independent claim 1 recites subject matter which is allowable over that described in Kikuchi.

Claims 2, 3, 5, and 7-11 are each allowable, among other reasons, for depending either directly or indirectly from claim 1, which is allowable.

Claim 5 is additionally allowable since Kikuchi lacks any express or inherent description that the glass epoxy resin from which support members 6 thereof may be formed is a photocurable material.

Independent claim 13 is also drawn to a semiconductor device component that includes a substrate and at least one stabilizer protruding from a surface of the substrate. The at least one stabilizer of the semiconductor device component of independent claim 13, which includes a plurality of superimposed, contiguous, mutually adhered layers, each of which comprises dielectric material, is positioned between a periphery of the surface from which it protrudes and contact pads that are exposed to that surface of the substrate.

It is respectfully submitted that, despite mentioning that adhesive may be used to secure support members 6 to a circuit board 2, Kikuchi includes no express or inherent description that support members 6 include a plurality of superimposed, contiguous, mutually adhered layers.

Moreover, assuming, *arguendo*, that the adhesive of Kikuchi were a layer of a support member 6, Kikuchi does not expressly or inherently describe that the adhesive mentioned therein is a dielectric material.

Therefore, it is respectfully submitted that Kikuchi does not anticipate each and every element of independent claim 13. Accordingly, under 35 U.S.C. § 102(b), independent claim 13 recites subject matter which is allowable over that disclosed in Kikuchi.

Each of claims 14-22 and 24 is allowable, among other reasons, for depending either directly or indirectly from claim 13, which is allowable.

Claim 17 is further allowable because Kikuchi lacks any express or inherent description that the glass epoxy resin from which support members 6 thereof may be formed is a photocurable material.

Independent claim 25 recites a semiconductor device component that includes a substrate and at least one nonconductive stabilizer. The substrate of that semiconductor device component includes contact pads that are arranged substantially in-line with other contact pads and positioned proximate to a center line of the substrate. The at least one nonconductive stabilizer protrudes from the surface of the substrate and is positioned between a periphery of the surface and the contact pads. The at least one nonconductive stabilizer also comprises an elongate element which extends in a direction parallel to the surface of the substrate.

By way of contrast with the subject matter recited in independent claim 25, Kikuchi lacks any express or inherent description that either circuit board 2 or circuit board 5, 10 thereof may include contact pads that are arranged substantially in-line with other contact pads and proximate to a center line of circuit board 2, 5, or 10.

Accordingly, it is respectfully submitted that Kikuchi does not anticipate each and every element of independent claim 25, as is required to maintain a 35 U.S.C. § 102(b) rejection based on the disclosure of Kikuchi. As such, under 35 U.S.C. § 102(b), independent claim 25 recites subject matter which is allowable over that described in Kikuchi.

Claims 27-30 are each allowable, among other reasons, for depending either directly or indirectly from claim 25, which is allowable.

Claim 30 is also allowable since Kikuchi lacks any express or inherent description that the glass epoxy resin from which support members 6 thereof may be formed is a photocurable material.

Independent claim 31, as amended and presented herein, is directed to a semiconductor device component that includes a substrate with contact pads that are arranged substantially in-line with one another and that are positioned proximate to a center line of the substrate. The semiconductor device component of amended independent claim 31 also includes at least one

stabilizer protruding from the surface of the substrate. The at least one stabilizer comprises an elongate structure which extends in a direction parallel to a plane of the surface and is positioned between a periphery of the surface and all of the contact pads of the substrate.

Again, Kikuchi lacks any express or inherent description that either circuit board 2 or circuit board 5, 10 thereof may include contact pads that are arranged substantially in-line with other contact pads and proximate to a center line of circuit board 2, 5, or 10.

Therefore, it is respectfully submitted that Kikuchi does not anticipate each and every element of amended independent claim 31 and, thus, that, under 35 U.S.C. § 102(b), amended independent claim 31 is drawn to subject matter which is allowable over the disclosure of Kikuchi.

In view of the foregoing, it is respectfully requested that the 35 U.S.C. § 102(b) rejections of claims 1-3, 5, 7-11, 13-22, 24, 25, and 27-31 be withdrawn.

Rejections Under 35 U.S.C. § 103(a)

Claims 12, 23, and 26 stand rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Kukuchi in View of Sato

Claims 12 and 23 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is purportedly unpatentable over teachings from Kukuchi, in view of the teachings of U.S. Patent 6,287,895 to Sato (hereinafter “Sato”).

Claims 12 and 23 are allowable, among other reasons, for respectively depending from claims 1 and 13, which are allowable.

Kukuchi in View of Kuniaki

Claim 26 stands rejected under 35 U.S.C. § 103(a) for being drawn to subject matter which is assertedly unpatentable over the teachings of Kukuchi, in view of teachings from Japanese patent publication 10-189653 of Kuniaki et al. (hereinafter “Kuniaki”).

Claim 26 is allowable, among other reasons, for depending from claim 25, which is allowable.

Claim 26 is additionally allowable because one of ordinary skill in the art would not have been motivated to combine the teachings of Kikuchi and Kuniaki in the manner that has been asserted. In particular, the spacer members 6 of Kikuchi are formed from a glass epoxy resin, which is presumed to be a dielectric material, whereas the spacing solder bumps 12 of Kuniaki are formed from solder, which is a conductive material. Further, the spacer members 6 of Kikuchi may be formed directly on or secured direction to a surface of a substrate 2, 5, 10, whereas dummy bond pads 5 are required to secure the spacing solder balls 12 of Kuniaki to the semiconductor element 3 taught therein.

In view of the divergence in the teachings of Kikuchi and Kuniaki, it appears that any motivation to combine teachings from these references could only have been improperly gleaned from the hindsight provided by the subject matter disclosed in the above-referenced application.

Therefore, it is respectfully submitted that a *prima facie* case of obviousness under 35 U.S.C. § 103(a) has not been established against claim 26.

For these reasons, withdrawal of the 35 U.S.C. § 103(a) rejections of claims 12, 23, and 26 is respectfully requested.

CONCLUSION

It is respectfully submitted that each of claims 1-3, 5, and 7-31 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



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